

DAIRY PIPELINE

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University of Minnesota
Bi-Plate (top),
Tri-Plate (bottom).

On-farm culturing: Understanding the basics

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The most frequent reason for antibiotic use on-farm has been reported to be mastitis. However, culture results yield approximately 40% of cases that show no bacterial growth and may not require treatment. Additionally, antibiotic treatment of a portion of the Gram-positive pathogens isolated from clinical mastitis cases is not recommended due to susceptibility results and/or clinical history of the cow. Therefore, administering antibiotics to all cases of clinical mastitis results in unnecessary dumped milk and the economic loss associated with antibiotic treatment. Consequently, antibiotic treatment should be determined by culture results of each individual case of clinical mastitis. Traditional methods of culturing at a nearby laboratory do not always yield timely results, which has led to the development of various on-farm culture systems.

One system commonly used, is the University of Minnesota Bi-Plate or Tri-Plate system. As the names suggest, the Bi-Plate is an agar plate with two medias and the Tri-Plate offers three media types. The Bi-Plate system can distinguish between Gram-positive pathogens, such as *Staph. aureus* or *Streptococcus* spp., and Gram-negative pathogens such as *E. coli*. The Tri-Plate system has a selective media for *Streptococcus* spp, allowing a producer to distinguish those from other Gram-positive pathogens such as *Staph. aureus*. The cost comparison between these two testing systems is \$3.00 per sample for the Tri-Plate compared to \$1.80 per sample for the Bi-Plate. In my opinion, the ability to distinguish *Streptococ-*

cus spp. from other Gram-positive pathogens is worth the \$1.20 difference in cost.

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To set up an on-farm culture system, a producer needs sterile tubes to aseptically collect milk samples as well as an incubator, the agar plates, and sterile swabs. A commonly used and low-cost incubator is the Hova-Bator (model 50011), available online for \$57.00. The remaining supplies are available for purchase from the University of Minnesota Veterinary Diagnostic Laboratory. The plates may be purchased individually (no minimum quantity required). The sterile tubes are \$24.25/125 tubes and the sterile swabs are \$1.25/100 swabs. This allows producers to tailor the order to their needs and herd size. In essence, the supply cost is approximately \$3.35/sample with the start-up cost of \$57.00 for the incubator.

Once a cow has been identified with mastitis, a sample should be aseptically collected from the clinical quarter. Using a sterile swab, the milk is streaked on each of the 2 or 3 medias (depending on whether the Bi-Plate or Tri-Plate is chosen) and put in the incubator for 24 hours. At that point, the plate is read and with the use of the Easy Culture System Handbook (available at no-cost from the Univ. of MN VDL), the reader can determine the pathogen type. Based on pathogen type, an appropriate treatment protocol is assigned. I suggest each producer work with their herd veterinarian to set up treatment protocols using the on-farm culture system.

Many producers are hesitant to wait 24 hours for the culture results prior to starting



Upcoming Events

See [VTDairy](#) for details.

November 1-4, 2017

[Low-Energy Handling Program for Dairy and Beef Producers, featuring Dr. Don Höglund](#) — To RSVP or for more information: 540-483-5161

November 8-9, 2017

[Southeast Quality Milk Initiative Annual Meeting](#)
Opryland, Nashville, TN

November 11-12, 2017

[Virginia Tech Dairy Science Open House](#)

November 27, 2017

Shenandoah District Holstein Meeting, Harrisonburg

November 29-30, 2017

Dairy Energy Efficiency Workshop

Pesticide Re-certifications November & December

Multiple dates, contact your local office.

February 14-15, 2018

Virginia State Feed Association Convention & Virginia Tech Nutritional Management “Cow College”

March 24, 2018

Little All-American

May 14, 2018

Hokie Cow Classic

If you are a person with a disability and require any auxiliary aids, services or other accommodations for any Extension event, please discuss your accommodation needs with the Extension staff at your local Extension office at least 1 week prior to the event.

For more information on Dairy Extension or to learn about current programs, visit us at VT Dairy—Home of the Dairy Extension Program on the web at: www.vtdairy.dasc.vt.edu.



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treatment. However, the literature suggests there is no difference in days to clinical cure or treatment failure. In fact, waiting for culture results tended to decrease milk withholding time by 1 day and also reduced antibiotic use by half. Furthermore, no long-term effects were seen for SCC, milk production, clinical mastitis recurrence or survival in the herd for the remaining lactation.

Based on these research findings coupled with the low-input costs associated with this

Learning is a lifelong endeavor

—Jeremy Daubert, Extension Agent, Rockingham County; idaubert@vt.edu

In extension, professional development is an annual expectation. Some professions, such as doctors or veterinarians, require continuing education classes periodically.

Many certifications require that additional credits be obtained to maintain the certification. No matter what you are doing in life, it is important to be in a constant state of learning.

Though it goes by many names, we are all constantly learning. This can be through traditional classes or by paying attention to your surroundings. One of the reasons that Cooperative Extension was developed a little over 100 years ago was to provide educational opportunities to everyone. It is often hard to explain Cooperative Extension is to someone who has never heard of it, but we are exactly what the name implies. A Cooperative: we are a partnership of local, state, and federal public funds along with local private funds and resources. An Extension: we are an extension of the land grant university. In Virginia, we have two land grant universities, Virginia Tech and Virginia State University. This means that your local extension office is an extension of the universities, providing educational opportunities for everyone. We are here to support your life-long learning.

“Education is learning what you didn’t even know you didn’t know.” This quote by historian Daniel J. Boorstin is often true. Sometimes learning happens by chance,

system, an on-farm culture system can work for most dairy operations. The operation must have at least one person who is interested in gaining this knowledge and becoming adept at reading the agar plates. Identifying pathogens is not necessarily an easy task, but this system has taken much of the guess-work out.

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curiosity facilitates this learning and personal growth. However, often it takes effort to learn what you did not know. Our knowledge of this world

grows daily and sometimes what we did know just plain changes over time.

No matter where you are in your personal and professional life, there is always something to learn. Take advantage of the opportunities available, they are plentiful. With today’s technology, the information available is greater than ever before—and more easily accessible. Webinars and online articles are great ways to get information. Extension websites for many states are available with information in many areas. Of course we offer traditional methods of getting

information out as well. Meetings and workshops, newsletters, emails and magazines are all available for you to attend or read.

Sometimes these opportunities are overwhelming, as there are so many of them. It is not necessary to attend everything that is available, but it is recommended that you try to get some educational information every year. This goes for both your personal life and your professional life. While dairy farming is a way of life, it is also a business that needs to be profitable to be sustainable over time.

Take the time in the coming year to improve your life through time management, financial management or managing your farm. There is always something to learn, you just need to find the opportunities that are available. Make it a priority to learn something every day.

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